Abstract

A hydrocarbon feedstock containing C_5 olefins, C_5 diolefins, CPD, DCPD, and aromatics is processed by the steps of heating a hydrocarbon feedstock containing CPD, DCPD, C_5 diolefins, benzene, toluene, and xylene in a heating zone, to dimerize CPD to DCPD, thereby forming a first effluent; separating the first effluent into a C_6 + stream and a C_5 diolefin stream; separating the C_6+ stream into a C_6 - C_9 stream and a C_{10}+ stream; separating the C_{10}+ stream into a fuel oil stream and a DCPD stream; and hydrotreating the C_6 - C_9 stream to thereby form a BTX stream.

In an alternate embodiment, the hydrocarbon feedstock is processed by the steps of heating the hydrocarbon feedstock in a heating zone, to dimerize CPD to DCPD, thereby forming a first effluent; separating the first effluent into a C_5 - C_9 stream and a C_{10}+ stream; separating the C_{10}+ stream into a fuel oil stream and a DCPD stream; contacting the C_5 - C_9 stream with a selective hydrogenation catalyst, in a first reaction zone and in the presence of hydrogen, to hydrogenate at least a portion of the diolefins, alkynes, and styrene contained in the C_5 - C_9 stream, thereby forming a second effluent; separating the second effluent into a C_6 - C_9 stream and a C_5 olefin stream; and contacting the C_6 - C_9 stream with a hydrodesulfurization catalyst, in a second reaction zone and in the presence of hydrogen, to desulfurize at least a portion

of the sulfur-containing compounds contained in the C_6 - C_9 stream thereby forming a BTX stream.